STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: February 25, 2019

FROM: Sarah Large
Wetlands Program Analyst

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT Dredge & Fill Application
Ossipee, 10431

TO Gino Infascelli, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Bridge Design for the subject minimum impact project. This project is classified as minimum per Env-Wt 303.04(j). The project is located on NH Route 16 and NH Route 28 in the Town of Ossipee, NH. The proposed work consists of widening shoulders, upgrading signals, rehabilitating pavement, drainage upgrades to cross culverts and underdrain, and the construction of three treatment swale areas.

This project was reviewed at the Natural Resource Agency Coordination Meetings on November 16, 2016 and August 17, 2016. A copy of the minutes has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm

A compensatory mitigation proposal has not been included per Env-Wt 302.03(c).

The lead people to contact for this project are James Marshall, Administrator, Bureau of Highway Design (271-2731 or James.Marshall@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or Andrew.O'Sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher #560382) in the amount of $514.10.

If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

SEL:sel
Enclosures

cc:
BOE Original
Town of Ossipee (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Bureau of Construction
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Mark Kern, US Environmental Protection Agency (via electronic notification)
Michael Hicks, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

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NHDES-W-06-012

WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: www.des.nh.gov/onestop

RSA/Rule: RSA 482-A/ Env-Wt 100-900

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to Guidance Document A for instructions.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if Mitigation is Required, please refer to the Determine if Mitigation is Required Frequently Asked Question.

Mitigation Pre-Application Meeting Date: Month: __ Day: __ Year: ____

☒ N/A - Mitigation is not required

3. PROJECT LOCATION:

Separate wetland permit applications must be submitted for each municipality that wetland impacts occur within.

ADDRESS: **NH Route 16 and NH Route 28**			TOWN/CITY: **Ossipee**
TAX MAP: **N/A**	BLOCK: **N/A**	LOT: **N/A**	UNIT: **N/A**
USGS TOPO MAP WATERBODY NAME: ☒ NA		STREAM WATERSHED SIZE: ☒ NA	
LOCATION COORDINATES (If known): **43.702547,-71.109769 & 43.715453,-71.123605**		☒ Latitude/Longitude ☐ UTM ☐ State Plane	

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

The proposed project will provide safety improvements on NH Route 16 by widening shoulders, upgrading signals and rehabilitation of pavement. Drainage upgrades to cross culverts and underdrain is included as well as the construction of 3 treatment swale areas.

5. SHORELINE FRONTAGE:

☒ NA This does not have shoreline frontage. SHORELINE FRONTAGE:

Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application.

To determine if other Land Resources Management Permits are required, refer to the Land Resources Management Web Page.

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	☐ YES ☐ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:2	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Subdivision Approval Per RSA 485-A	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Shoreland Permit Per RSA 483-B	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:

See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB **18** - **3352** .

b. ☐ Designated River the project is in ¼ miles of: _____ ; and
date a copy of the application was sent to the Local River Management Advisory Committee: Month: __ Day: __ Year: ____
☒ N/A

8. APPLICANT INFORMATION (Desired permit holder)

LAST NAME, FIRST NAME, M.I.: **NH Dept. of Transportation**

TRUST / COMPANY NAME: **NH Dept. of Transportation** | MAILING ADDRESS: **PO Box 483**

TOWN/CITY: **Concord** | STATE: **NH** | ZIP CODE: **03302**

EMAIL or FAX: | PHONE: **603-271-2171**

ELECTRONIC COMMUNICATION: By initialing here: _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.

9. PROPERTY OWNER INFORMATION (If different than applicant)

LAST NAME, FIRST NAME, M.I.: **NH Dept. of Transportation**

TRUST / COMPANY NAME: **NH Dept. of Transportation** | MAILING ADDRESS: **PO Box 483**

TOWN/CITY: **Concord** | STATE: **NH** | ZIP CODE: **03302**

EMAIL or FAX: **Sarah.Large@dot.nh.gov** | PHONE: **603-271-3226**

ELECTRONIC COMMUNICATION: By initialing here **SEL**, I hereby authorize NHDES to communicate all matters relative to this application electronically.

10. AUTHORIZED AGENT INFORMATION

LAST NAME, FIRST NAME, M.I.: | COMPANY NAME:

MAILING ADDRESS:

TOWN/CITY: | STATE: | ZIP CODE:

EMAIL or FAX: | PHONE:

ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.

11. PROPERTY OWNER SIGNATURE:

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for NHPA 106 compliance.
8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail.

Property Owner Signature	Print name legibly	Date
James A. Marshall	James A. Marshall	2/21/19

MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

⇨	Print name **legibly**	Date

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will be reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

⇨ Town/City Clerk Signature	Print name legibly	Town/City	Date

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

14. IMPACT AREA:
For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact
Permanent: impacts that will remain after the project is complete.
Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland	245	☐ ATF	1035	☐ ATF
Scrub-shrub wetland	395	☐ ATF	645	☐ ATF
Emergent wetland		☐ ATF		☐ ATF
Wet meadow		☐ ATF		☐ ATF
Intermittent stream	65 / 45	☐ ATF	187 / 35	☐ ATF
Perennial Stream / River	/	☐ ATF	/	☐ ATF
Lake / Pond	/	☐ ATF	/	☐ ATF
Bank - Intermittent stream	/	☐ ATF	/	☐ ATF
Bank - Perennial stream / River	/	☐ ATF	/	☐ ATF
Bank - Lake / Pond	/	☐ ATF	/	☐ ATF
Tidal water	/	☐ ATF	/	☐ ATF
Salt marsh		☐ ATF		☐ ATF
Sand dune		☐ ATF		☐ ATF
Prime wetland		☐ ATF		☐ ATF
Prime wetland buffer		☐ ATF		☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)		☐ ATF		☐ ATF
Previously-developed upland in TBZ		☐ ATF		☐ ATF
Docking - Lake / Pond		☐ ATF		☐ ATF
Docking - River		☐ ATF		☐ ATF
Docking - Tidal Water		☐ ATF		☐ ATF
Vernal Pool		☐ ATF		☐ ATF
TOTAL	705 / 45		1867 / 35	

15. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☐ Minimum Impact Fee: Flat fee of $ 200
☒ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking)	**2572** sq. ft.	X	$0.20 =	**$ 514.40**
Temporary (seasonal) docking structure:	sq. ft.	X	$1.00 =	$
Permanent docking structure:	sq. ft.	X	$2.00 =	$
Projects proposing shoreline structures (including docks) add $200			=	$
			Total =	**$ 514.40**
The Application Fee is the above calculated Total or $200, whichever is greater =				**$ 514.40**

Ossipee 10431 Project Area

0 0.25 0.5 1 Miles

1:24,000

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS

Land Resources Management
Wetlands Bureau

Check the Status of your application: www.des.nh.gov/onestop

RSA/ Rule: RSA 482-A, Env-Wt 100-900

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:
1. The need for the proposed impact.
The proposed project and impacts are to provide infrastructure improvements to the NH Route 16 corridor from the NH Route 28 intersection north approximately 1 mile. These safety improvements will widen NH Route 16 shoulders and remove the existing concrete roadway base; other improvements include signal upgrades and culvert replacements. In order to build these improvements, there are some impacts to wetlands and one intermittent stream in the project area. The proposed impacts to wetlands and the intermittent stream are relatively small when considering the overall size of the project and scope of the proposed improvements. Storm water treatment will be addressed by the construction of 3 treatment swales throughout the project area.
2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.
The alternative choosen is an on line reconstruction of the existing roadway which has minimal impacts to the surrounding wetlands. **The no-build alternative would have fewer impacts to wetlands and surface waters, but it would not address the safety concerns and would not lead to any improvements in the project area.** **The selected alternative is anticipated to meet the purpose and need of the project and minimizes impacts to wetlands to the maximum extent possible, since the profile and alignment of NH Route 16 will be retained as it exists.**

3. The type and classification of the wetlands involved.

The wetlands to be impact by the proposed project are as follows:

PFO1B - Palustrine, Forested Broad-Leaved Deciduous, Saturated

PSS1/FO1E - Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Palustrine, Forested Broad-Leaved Deciduous, Seasonally Flooded/Saturated.

PFO1E - Palustrine, Forested Broad-Leaved Deciduous, Seasonally Flooded/Saturated.

R4SB6 - Riverine, Intermittent, Streambed, Organic

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

The wetlands that are proposed to be impacted by the project are not near other surface waters. The closest surface water is Duncan Lake which is approximately 600 ft from the project location. The majority of the wetlands that are impacted by the proposed project appear to be pockets of wetland area that are not immediately connected to any large wetland complex or stream system. There is one intermittent stream and its associated forested wetlands located at the inlet and outlet of a culvert near the intersection with Isaac Buswell Road where impacts are proposed. This stream appears to potentially convey water at certain times of year to Duncan Lake.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

The wetlands identified in the project area are types that are common in New Hampshire. No rare or unique wetland types were identified. The Town of Ossipee has not designated any wetlands as Prime Wetlands under NH RSA 482-A:15. The nearest water body under the jurisdiction of the Shoreland Water Quality Protection Act to the project area is Duncan Lake, which is located east of NH Route 16 near the intersection with NH Route 28. All of the project impacts are anticipated to be more than 250 feet from Duncan Lake.

6. The surface area of the wetlands that will be impacted.

There is a total impact of 2572 SF with 705 SF permanent and 1867 SF temporary

Forested Wetland : 245 Sf permanent and 1035 SF temporary

Scrub- Shrub Wetland: 395 SF permanent and 645 SF temporary

Intermittent Stream: 65 SF permanent and 187 SF temporary

7. The impact on plants, fish and wildlife including, but not limited to:
   a. Rare, special concern species;
   b. State and federally listed threatened and endangered species;
   c. Species at the extremities of their ranges;
   d. Migratory fish and wildlife;
   e. Exemplary natural communities identified by the DRED-NHB; and
   f. Vernal pools.

a. Rare and special concern species identified in and near the project area are also listed as state and federal species.

b. Coordination was initiated with the NH Fish and Game Department regarding two State of NH listed animal species known to have been found adjacent to the project area, the Northern Black Racer and the Wood Turtle. Conservation measures were selected to reduce the potential for project impacts to these species: All observations of Northern black racers (snake) shall be reported to the Bureau of Environment. The Department shall coordinate with the NH Fish and Game Department; Any Wood turtles that are observed nesting in the project area shall not be disturbed and shall be reported to the Bureau of Environment. The Department shall coordinate with the NH Fish and Game Department; Wildlife friendly erosion control options, such as, erosion control berm and woven organic material shall be utilized in the project area.

The project area also is potential habitat for Northern Long-Eared Bat (NLEB), a federally listed species. Project tree clearing will likely be conducted during the active season for bats, therefore, potential adverse effects to the Northern Long-Eared Bat cannot be avoided and the project has been determined a "may effect, likely to adversely affect" (LAA) project. The project adheres to the criteria and conditions of the FHWA USFWS Range-wide Programmatic Consultation. All applicable avoidance and minimization measures (AMMs) for a Programmatic LAA finding will be implemented.

The project area was also found to include a federally listed plant species, the small whorled pogonia during plant surveys in one area. The project design was modified to maintain the hydrology that currently exists near the area where the plant was found and a stormwater BMP location was adjusted to avoid impacts to the plant.

c. No species at the extremeties of their range are known to be present in or near the project area.

8. The impact of the proposed project on public commerce, navigation and recreation.

The construction of the proposed work may cause some travel delays; public access will be maintained for all businesses and residents. Access through the NH RTE 16 corridor will remain open by utilizing one-lane, two-way alternating traffic when two lanes cannot be maintained, throughout all construction. The project will not require a detour and is not anticipated to impact recreation in the project area.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

Aesthetics of the area will not be impacted negatively with the proposed work. Limited impacts would occur during construction associated with the presence of heavy equipment and temporary impacts in noise and dust. The project area and RTE 16 corridor will appear to be largely the same, though the road will be wider, following construction.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The proposed work will not have negative impacts to the public's rights of passage or access. Though the traveling public may experience some temporary inconvenience during construction traffic will be maintained using one-lane, two-way alternating traffic when two lanes cannot be maintained. Access to all business and residents along the corridor will be maintained throughout the entire project.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

Impacts to abutting property owners may occur due to construction of roadway widening along abutting properties. The impacts due to construction may include temporary changes in traffic patterns, increased levels of noise and dust. These impacts would be temporary and return to existing condition upon project completion.

The impacts due to the change in pavement width and drainage will be minimal. Most drainage work is the replacement of existing systems and will not cause upstream or downstream flooding. However the proposed work will increase the shoulder width creating a safer route which will benefit abutting owners. Also, the project proposes storm water treatment areas, which will reduce potential impacts to water quality in the project area.

12. The benefit of a project to the health, safety, and well being of the general public.

The improvements proposed on NH 16 will include safety improvements which will benefit the general public traveling on NH 16, as well as property owners and businesses along the project route.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

Currently, runoff from the project area is directed into some treatment areas located at the southern portion of the project area. The treatment areas are associated with commercial buildings located at the intersection of NH Route 16 and NH Route 28. The runoff from most of the project area is not currently treated in any formalized treatment area.

For approximately 4,000 linear feet, the project proposes widening of NH Route 16 to allow for construction of road shoulders. This widening will result in an increase in impervious area within the project area. There will be minimal impact to the amount of drainage exiting the site and the project includes storm water treatment swales to improve the quality of water. The project proposes to construct water quality treatment swales which treat approximately twice the increase in impervious area that is proposed for the widening of RTE 16. Therefore, the project is not anticipated to have negative effects on the groundwater or surface water quality in the area.

The project will include a Storm Water Pollution Prevention Plan to reduce impacts to water quality during contruction by ensuring appropriate erosion controls.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

The proposed work will allow the water to flow in similar patterns to existing conditions; runoff will flow through ditches to cross culverts as it does today. The project includes water quality treatment measures in the form of treatment swales as indentified on the plans. Also, during construction the project will include a Storm Water Pollution Prevention Plan to reduce impacts to water quality during contruction by ensuring appropriate erosion controls.

Based on existing FEMA mapping, the project area does not include FEMA-mapped regulatory floodways or 100 year floodplains. As the proposed project does not include work within a regulatory floodway or any designated floodplains, the work as proposed will not present any new obstructions to floodways or result in an increase in an established base flood elevation. The project will not increase flooding.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The proposed project is not impacting surface waters which produce current or wave energy.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

The wetlands impacts with this project are associated with drainage culverts and treatment swale outlets. The few wetland impacts that are proposed by the project are located along a stretch of NH RTE 16. The improvements proposed by the project are not likely to be initiated by any abutting property owners.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

The minimal impacts to the wetlands are not anticipated to impact their value or function. The wetlands adjacent to the roadway serve the function of sediment/toxicant/pathogen retention and nurtient removal/retention/transformation. The wetlands impacts proposed are relatively minor and a Storm Water Pollution Prevention Plan will be utilized during construction to protect water quality and prevent erosion or sedimentation from impacting the areas of wetlands abutting the project impact areas.

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

There are no sites included or eligible for the National Register of Natural Landmarks in the project area.

19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

There are no areas named in acts of congress or presidential proclamations in the project area.

20. The degree to which a project redirects water from one watershed to another.

The project will not redirect any water from one watershed to another.

Additional comments

7.d. The project area has not been identified as habitat of particular importance for any migratory fish or wildlife. The project is not anticipated to have any significant effects on migratory fish or wildlife species. There will be an increase in noise, disturbance and dust in the project area during construction. However, these will be temporary increases.

7. e. The NHB database review established that there is a record of a natural community located north of the project area. Once the project limits were refined, NH Natural Heritage Bureau staff indicated that the natural community would not be impacted by the project as currently proposed since the rare community is located a sufficient distance away from the northern project limit.

7. f. The project area is not known to include any vernal pools that would be impacted by the project as proposed.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: August 17, 2016
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Tony Weatherbee
Marc Laurin
Chris Carucco
Trent Zanes
Mike Dugas
Kirk Mudgett
Victoria Chase
Jennifer Reczek
Gerry Bedard
Rebecca Martin

Army Corps of Engineers
Michael Hicks

EPA
Mark Kern

FHWA
Jamie Sikora
Mark Hasselmann

NHDES
Gino Infascelli
Lori Sommer

NH Fish & Game
Carol Henderson
Heidi Holman

NHB/DRED
Amy Lamb

Consultants/Public Participants
Peter Pitsas
Allison Reese
Peter Walker
Christine Perron

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:
(minutes on subsequent pages)

(When viewing these minutes online, click on a project to zoom to the minutes for that project

Mapped 100-year floodplains are adjacent to the project area at two locations: Kimball Brook at the north end of the project and the northernmost crossing of Gues Meadow Brook. Impacts to floodplains will be assessed as design of the project progresses.

M. Hicks asked when submittal of permit applications was anticipated. R. Crickard said that the first contract for this phase was expected to advertise in 2018, so the permit application would likely be submitted by the fall of 2017.

M. Hicks asked how long the project is. T. Zanes replied that Phase 1 is about 4.5 miles in length.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Ossipee, 10431 (X-MGS_NHS_X_T-0271(032))

Jon Hebert provided a brief overview of the project. He mentioned that the project has been around for around 20 years and, though the project limits have remained the same, the scope has been reduced due to a limited budget. The project has gone through several iterations, including a bypass option. The preferred alternative at this time is 3.4 miles in length and includes 3 treatment types. J. Hebert showed a concept plan for the project and explained that there are three different treatments proposed for the project.

At the southern portion of the project beginning at the intersection of Route 16 and Route 28 the project proposes signal upgrades, restriping and a pavement overlay. The treatment will extend from the intersection with Route 28 on Route 16 to the intersection with Isaac Buswell Road. There will be some drainage improvements in this area and a small amount of pavement removed (the slip ramp free right turn lane onto Route 28).

The middle portion of the project is where the major work is proposed. This section begins at around the intersection with Isaac Buswell Road and extending north to just north of Polly's Crossing Road. The proposed treatment is step box reconstruction with widening and drainage work. This section of roadway has not been improved, the northern and southern sections have been improved by previous projects. Currently, the design includes removing the concrete from the old roadway that is underneath the current roadway. The proposal is for full reconstruction of the roadway (new box and pavement) and expanding the road from 24 feet to 32 feet wide by adding 4 foot shoulders (3 feet of paved shoulder). J. Hebert described that the project will increase the impervious area in the project area by approximately 13,000 square feet.

The northern section will be from just north of Polly's Crossing Road north for around 2.1 miles to around the intersection with Route 16B, the treatment will be to cold plane 3 inches of existing pavement and put back 3 inches of HBP pavement and drainage improvements. The road work will be within the existing edge of pavement.

J. Hebert explained that the project will include some drainage work and will require some minor right-of-way purchases. At this time the locations of drainage improvements are still being field verified. Rebecca Martin and Matt Urban updated the wetland delineation for the project area.

Minor wetland impacts are anticipated, estimated at approximately 3,000 square feet of impacts. There will be some tree clearing, estimated at around 0.25 acres.

Kirk Mudgett described that a stormwater treatment area is being considered north of the intersection of Route 16 with Route 16B. K. Mudgett explained that there may also be some opportunity for treatment at the intersection of Route 16 and Route 28, but that there would likely be difficulties with this area because of existing facilities in the area. That location would also not meet the entire needs for added impervious area treatment, whereas the 16B location could possibly treat more than what we need.

R. Martin shared a PowerPoint and described known resources in the project area. There will be one or more streams with minor impacts anticipated. Two federally listed species were identified for the project area, Small Whorled Pogonia and Northern Long Eared Bat (NLEB). R. Martin explained that there was a Northern Long Eared Bat probable presence indicated by an acoustic survey for the nearby Ossipee 14749 project. However, due to limited clearing for the Ossipee 10431 project, habitat impacts are not anticipated to be significant and the project should qualify for the new FHWA Programmatic Consultation Biological Opinion. Also, according to NH Fish and Game and the information received from Natural Heritage Bureau, there are not known NLEB hibernacula or maternity roost trees in Ossipee and the work is anticipated to be within 300 feet of the roadway. R. Martin informed the group of state listed species in the project area, the Northern Black Racer (NH Threatened) and the Wood Turtle (Species of Special Concern). Carol Henderson asked that the wildlife friendly erosion control be utilized in the project area. She suggested the cocoa matting. R. Martin explained that consultation has been ongoing with the NH Natural Heritage Bureau regarding a rare natural community, a temperate minor river floodplain system, and the Small Whorled Pogonia records near the project area. Amy Lamb requested that R. Martin send the location of the project in proximity to the rare community (completed 8/25/16). Amy Lamb also suggested that DOT coordinate with USFWS regarding the Small Whorled Pogonia (initiated 8/25/16).

The group discussed the intended treatment intended for the added impervious area. Gino Infascelli commented that he is concerned about the wetland near Duncan Lake which may be a bog. He also mentioned that the current locations being considered for proposed treatment areas for stormwater are not at the area where impervious area is being increased. J. Hebert mentioned that the grade of the roadway makes it difficult to construct swales on the roadside slopes in the middle section of the project. R. Martin commented that Kirk Mudgett, Mark Hemmerlein, and she visited the site to look for potential areas for treatment and that the other areas reviewed would either require significant clearing or purchase of right-of-way. G. Infascelli commented that he has difficulty following the thought process for installing treatment away from the added area and this makes him uncomfortable.

Jamie Sikora asked about the portions of roadway north and south of the area with greatest impacts. J. Hebert indicated that the lanes are fairly wide. This project would essentially fill in the gap in the middle treatment area where there are not shoulders.

Mike Hicks inquired if there will be floodway or floodplain impacts. J Hebert and R. Martin said there are not in this area.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Manchester/ Bedford Mitigation Wildlife Habitat

Ron Crickard (NHDOT) introduced the project for review. NH Fish and Game approached the Department of Transportation to manage parcels along Little Cohas Marsh, which were purchased as part of the mitigation for the Manchester Airport access road project. The potential to transfer the parcels to NH Fish and Game was discussed. Approval to begin implementation of management this fall on a small number of parcels and continue to pursue the transfer of the parcels is being requested.

Heidi Holman (NHFG) introduced the recovery effort for New England cottontails in this landscape. NHFG and partners are working to create 1000 acres of young forest habitat to support 500 rabbits in the long-term. Management on these parcels would include some commercial harvest and also some brontosaurus mowing. If approved the project will be brought in front of the State Lands Management Team monthly meeting to meet all federal compliance checks for impacts to historic resources, rare species etc. There are invasive plants on site, some wetland crossings, and other threatened and endangered species that need to be taken into account.

Mark Kern asked if the Cottontail prefer shrubby habitat and upland areas vs wetland habitat. Heidi Holman responded that is correct.

Mark Hasselmann from the Federal Highway Administration expressed FHWA support for the management and transfer of the parcels to NHFG provided the agencies concur this is an acceptable use of these mitigation parcels. The project meets the objective of why they were protected which included wildlife benefits. A process for transfer must be put in place.

Carol Henderson from NHFG brought up the concern of funding for taking on the properties if the transfer was to occur to the Department.

Lori Sommer (DES) also agreed that it may be necessary to provide some financial contribution to NHFG along with the transfer to provide for the stewardship of the parcels.

H. Holman (NHFG) also mentioned the Little Cohas Marsh has been a priority for the Department for waterfowl management. This is important that it meets additional objectives in addition to creating habitat for New England cottontail as consideration for the transfer. NHFG has to take into account the burdens of accepting any new property, and the potential for the entire area to be transferred improves the justification for our resources as well.

There will need to be an agreement between the two agencies for the management to occur. A timeline will need to be set for this to be implemented.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: November 16, 2016
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Mark Hemmerlein
Marc Laurin
Jon Evans
Rebecca Martin
Anthony Weatherbee
Don Lyford
Leah Savage
Jon Hebert
Jim Kirouac
Ali Skinner
Kathy Corliss
Tim Mallette
Josh Lafond
Chris Carucci
Carol Niewola
Stephanie Micucci
Bill Saffian
Colleen White
Kirk Mudgett
Wendy Johnson
Dave Smith

Army Corps of Engineers
Rick Kristoff

NHDES
Gino Infascelli
Lori Sommer

NH Fish & Game
Carol Henderson
John Magee

NH Natural Heritage Bureau
Amy Lamb

Consultants/Public Participants
Christine Perron
Brian Patinskas
Josh Lund
Jed Merrow
Steve Hoffmann
Dave Kull
Don Kretchmer
Ryan Lizewski
Bill Arcieri
John Gorham
Marv Everson
Martha Drukker

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:
(minutes on subsequent pages)

(When viewing these minutes online, click on a project to zoom to the minutes for that project

The bridge that carries US 3 over the Lake Waukewan Outlet (Bridge 186/145) will be rehabilitated. Proposed work will consist of rehabilitation of the culvert top slab to include partial and full depth slab repairs, new membrane and pavement, concrete repairs to the sidewalks, and curb replacement. No work in the water will be necessary.

Culverts will be replaced at two locations: twin 36" concrete culverts that carry an unnamed stream under US 3 near Lake Street, and two 15" drainage pipes at the end of Lake Street. These culvert replacements are the only work that will require work in the water.

Final design of this project is just getting underway. Permit applications will be submitted within the next few months and tentative advertising date for the project is July 2017. Construction would begin after Labor Day weekend to minimize traffic disruptions.

C. Perron provided an overview of resources in the project area and proposed impacts. Wetlands are located in the project area but will not be impacted. The wetland associated with Hawkins Brook had been designated as a Prime Wetland; however, Gino Infascelli indicated that the town had removed this designation and the DES map had not yet been updated. The only impacts in jurisdictional areas will be the culvert replacements, which will impact an intermittent stream and the edge of the lake. In addition, the project will require a Shoreland Permit By Notification for earth disturbance within the Protected Shoreland of Lake Winnipesaukee.

Surface waters in the project area are listed as impaired waters. The lake is impaired by cyanobacteria and hepatotoxic microcystins, and Hawkins Brook and Lake Waukewan Outlet are both impaired by dissolved oxygen saturation and pH. There are a number of constraints and challenges associated with providing stormwater treatment in the project area. The project area is fully developed and the Town of Meredith has requested that any proposed work avoid impacts to businesses and underground utilities. The open space that does exist in the project area consists of parks and recreational sites that are protected under Section 4(f) and Section 6(f). Given these constraints, the only BMP that is feasible is deep sump catch basins, which would be provided where catch basins will be replaced within the project area. The project will not increase the area of impervious surface and there may be small areas of sidewalk that are replaced with grass.

The twin pipes that carry an intermittent stream have a drainage area of 0.15 square miles, making this a Tier 1 stream crossing. The pipes will be replaced in-kind. The replacement of these pipes and the 15" drainage pipes will result in 254 square feet and 47 linear feet of permanent impact to channel, banks, and lakebed, 241 square feet of temporary impact.

There is no suitable habitat within the project for northern long-eared bat or small whorled pogonia. Section 106 consultation resulted in a finding that no historic properties would be affected by the project.

No concerns were raised with the project as proposed.

This project has been previously discussed at the 5/21/1992, 6/15/1995, 4/16/1997, 5/18/2005, 9/17/2008, 1/21/2009, and 6/18/2014 Monthly Natural Resource Agency Coordination Meetings.

Ossipee 10431, (Non-Federal)

Rebecca Martin explained that the team had hoped to have furthered the design of the stormwater treatment area to discuss at this meeting. However, after further investigation it was determined

that the considered treatment location north of the intersection with 16B on the western side of Route 16 was too near a wetland area. The intention now is to present the current drainage plan and request feedback.

Jon Hebert provided an overview of the project. The preferred alternative is 3.4 miles in length and includes 3 treatment types. J. Hebert showed a concept plan for the project and explained that there are three different treatments proposed for the project.

J. Hebert explained that in the southern treatment section the intersection with Route 28 will be improved with an updated signal and a flashing yellow arrow. He also noted a change in the design of the proposed project at the intersection with Mount Shaw Road. There will not be any widening in this area, but the lane configuration will be changed to address the high accident rates noted in a safety audit of the intersection. The new configuration will remove the truck climbing lane and instead provide a 12 foot two-way-left-turn lane. There are businesses in the area that motorists will be able to access more safely with a turning lane. J. Hebert commented that it may be possible to remove a small amount of pavement in this area to compensate for some of the additional impervious area being added.

J. Hebert described the project timeline, including a public hearing in February 2017 and advertising in June 2019. This will allow 18 months for right-of-way acquisition. Construction on the project is anticipated to begin fall or winter of 2019. J. Hebert explained that traffic is an issue in the summer, so there are really only 1.5 months in the fall and 1.5 months in the spring to complete the middle section of the project where reconstruction is proposed.

Leah Savage discussed the stormwater treatment that is being explored for the project. Approximately 13,000 square feet of impervious area is being added. Several sites either do not have curb to collect the water and/or the road banks are too steep to allow a treatment area to be installed. There is one area at the intersection of Route 28 where there is an opportunity to add treatment, but this area is not large enough to support treatment of water from twice the proposed additional impervious area. Mark Hemmerlein commented that the primary area being explored is at the intersection of Route 28 because this is where there is curbing. Gino Infascelli commented that the Department could explore adding to the Tractor Supply treatment area.

L. Savage described the drainage design for the project. She commented that there are 30 crossings that are proposed to be addressed by the project, the majority of the existing structures are old aluminum pipes. Four of the crossings are associated with streams. Three of the total 30 crossings are being considered for a slipline treatment. These pipes are very deep. The sliplining treatment will result in approximately a 6" reduction in diameter. One of the proposed pipes for sliplining is shown in StreamStats as a Tier 1. The other two have wetlands at either end, but do not appear on StreamStats. Matt Urban explained that most of the streams in the project area are intermittent. M. Urban stated that sliplining of Tier 1 streams is allowed. If replacement is selected instead of sliplining, this work might qualify for a Routine Roadway Maintenance Notification. John Magee reminded the group that StreamStats is a model, so it is not a perfect representation of the conditions.

Carol Henderson noted that Kim Tuttle has previously provided some guidance regarding notifications for sightings of snakes and nesting turtles and utilization of wildlife friendly erosion control. C. Henderson also recommended that pipe replacements are not perched.

R. Martin noted that at the time of the meeting it was unlikely that area near the temperate minor river floodplain system north of the intersection with Route 16B would be impacted by the design as it did not seem that the considered stormwater treatment would fit in this area. ***After the Natural Resources Agency Coordination meeting R. Martin received notice that due to a lack of options for treatment the opposite side of Route 16 north of the intersection with Route 16B is once again under consideration as a potential placement for treatment.

This project has been previously discussed at the 8/17/16 Monthly Natural Resource Agency Coordination Meetings.

Bethlehem 26763, (X-A004(296))

The proposed project is a Culvert Replacement on US 302 between Maple St (NH 142) and Congress Road. Rebecca Martin explained the project had been reviewed previously (5/15/2015). The Design team was returning to update the agencies on a modification to the design and resultant impacts. The stream through the structure is a tributary to Barrett Brook. Josh Lafond described the poor condition of the structure including the currently perched condition of the outlet. He also described the anticipated project impacts including around 20 feet of channel impacts and 40 feet of bank impacts at the inlet and around 97 feet of channel impacts and 210 feet of bank impacts at the outlet.

J. Lafond described the modifications to the design of the project:

- Removal of culvert alignment curvature: the new design proposes to replace the formerly currently curved culvert option with a straight culvert, requiring an increase in impacts to the stream
- Slight alignment shift to the west in order to minimize impacts to the Antique/Auto transmission property: the former design would have required a retaining wall to protect the foundation of the building
- Lengthening of the structure to accommodate pedestrian crossing on the Bethlehem Historical Society property (an existing foot bridge will be removed) and flattening the roadway embankment slope to 2:1 above the outlet. The current structure is 172' long and the proposed structure is 215' long
- Substitution of a baffle design in place of the originally anticipated embedded design to control water depth in the culvert to accommodate fish passage
- Addition of a downstream water control structure at the outlet of the structure
- Lowering of the roadway profile to accommodate positive drainage to the roadway from adjacent properties
- Formalization of the drive entrances and parking at Maia Papaya/Post Office and Town Hall/Fire Department to improve safety and egress by Emergency vehicles, and result in a slight reduction to impervious pavement
- Reconstruction of Route 302 (full box) through the project area and new trunk lines to collect storm water and deposit into the culvert with new catch basins

The Department believes that Ossipee 10431's impacts do not trigger any of the thresholds for mitigation. The project is classified as a minimum impact project per Env-Wt 303.04(j) therefore per Env-Wt 302.03(c) a compensatory mitigation proposal is not required.

Sta 127 Intermittent Stream Report

Region ID: NH
Workspace ID: NH20181129122637651000
Clicked Point (Latitude, Longitude): 43.70448, -71.11186
Time: 2018-11-29 07:26:51 -0500

The stream appears in the field to be intermittent (it was dry during summer field reviews). An existing 30" pipe will be replaced with a 36" RCP.

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.12	square miles
APRAVPRE	Mean April Precipitation	4.075	inches
WETLAND	Percentage of Wetlands	16.0255	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	148	feet per mi

Peak-Flow Statistics Parameters [Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.12	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	4.075	inches	2.79	6.23
WETLAND	Percent Wetlands	16.0255	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	148	feet per mi	5.43	543

Peak-Flow Statistics Disclaimers [Peak Flow Statewide SIR2008 5206]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

Statistic	Value	Unit
2 Year Peak Flood	3.16	ft^3/s
5 Year Peak Flood	5.95	ft^3/s
10 Year Peak Flood	8.47	ft^3/s
25 Year Peak Flood	12.2	ft^3/s
50 Year Peak Flood	15.4	ft^3/s
100 Year Peak Flood	19.3	ft^3/s
500 Year Peak Flood	29.6	ft^3/s

Peak-Flow Statistics Citations

Olson, S.A.,2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (http://pubs.usgs.gov/sir/2008/5206/)

ROADWAY REHABILITATION WITH CULVERT REPLACEMENT
ON NH ROUTE 16
OSSIPEE, NH
NHDOT PROJECT NO. 10431

SUPPLEMENTAL NARRATIVE

Project Description

The project involves the rehabilitation of NH Route 16 to provide safety improvements along the corridor under the Ten Year Plan. The proposed work includes reconstruction of the roadway, widening the shoulders to a 12'-4' typical, drainage improvements and signal upgrades. The project begins just south of NH Route 28 and will include an overlay of the intersection. Permanent and Temporary Easements are being obtained to execute the proposed project.

The proposed work includes the replacement of an existing hybrid structure 2'x3.5' box culvert and an existing 30" Cast Iron Pipe (CIP) which carry an intermittent stream just north of Isaac Buswell Rd across NH Route 16 in Ossipee, NH. The existing culverts will be replaced with one 36" Reinforced Concrete Pipe (RCP) which straightens the crossing but maintains the existing inlet and outlet elevations. A permanent drainage easement will be obtained for the inlet location and a temporary construction easement will be obtained for the outlet location.

At the Cultural Resource Meeting on January 18, 2017 this project was presented and addressed this culvert crossing. The design engineer explained that the existing culvert was significantly changed during the 1930 roadway construction when the 30" CIP was added. The proposed crossing will change the pipe to a singular straight pipe crossing. Realigning the pipe and removing the existing pipe are seen as necessary from an efficiency and safety viewpoint; the existing box culvert has shown deterioration that could lead to sinkholes if not removed.

Since this is a cross pipe, short term one-lane two-way alternating traffic will be necessary to complete this replacement. The existing crossing will be maintained while the proposed pipe crossing is constructed and removed once construction is complete.

Temporary and permanent wetland impacts will result from the replacement of this pipe and new stone treatment at the outlets. The contract will keep temporary impacts inside the proposed easements. Permanent impacts will be kept to the new headwall and stone locations as they impact the wetland area; these permanent impacts were kept as minimal as possible.

Existing Condition

The existing crossing is comprised of the 2'x3' box culvert and a 30" CIP. Due to the nature of the crossing consisting of two different types of culverts and the age of installation not all information could be obtained. The existing culvert is 33' of box culvert and 71' of cast iron pipe. The inlet of the box culvert has an elevation of 584.30' and the outlet has an elevation of 582.54'. There is observed deterioration of the existing box culvert but there is no known flooding at this location. The drainage area for this crossing location is 77 acres, based on USGS StreamStats and is categorized as a Tier 1 crossing.

The surrounding area includes palustrine, forested wetland and riverine intermittent streambed at both the inlet and outlet of this crossing. Downstream of the outlet and to the east of the project is Duncan Lake (over 400' from the outlet).

Proposed Condition and Hydraulic Analysis

The proposed pipe is a 36" RCP that is 92' in length, shortened from the existing total of 104' due to the realignment that straightens the pipe across the roadway. The proposed pipe will be constructed at elevations close to or matching the existing elevations with the inlet being 584.30' and the outlet being 582.60' resulting in a new increased slope of 1.85%. The existing inlet will be approximately 8' closer to the roadway and the outlet will be at the same location as the existing. Class B Stone will be installed at both the inlet and outlet.

Analysis of the proposed pipe was conducted to ensure that the capacity, conveyance and hydraulic conductivity were adequate during the 50 year storm event. USGS Streamstats provided a 50 year peak flow of 15.4 cfs and a 100 year peak flow of 19.3 cfs, with a drainage area of 77 acres (0.12miles). This information was used in the analysis through the program HY-8. The analysis found an overtopping flow of 70 cfs, therefore the proposed 36" RCP will pass both the Q50 and Q100.

At both the inlet and outlet, new concrete headwalls will be constructed with stone treatment within the channel.

NH Department of Transportation
Bureau of Highway Design
Project, #10431

Env-Wt 904.07 In-Kind Replacement of Tier 1 or Tier 2 Existing Legal Crossings

- In order to qualify under this section, the crossing cannot have a history of causing or contributing to flooding that damages the crossing or other infrastructure. Does the crossing have a history of flooding? **No.**

The replacement stream crossing shall be the same size and type as the existing OR an upgrade. Please describe how this applies to the subject project. **The replacement will be an upgrade. The existing crossing a hybrid structure that consists of a 2'x3' box and a 30" cip and the new crossing will be a 36"rcp. The crossing will have a new alignment that removes a joint in the existing pipe while maintaining the same inlet and outlet elevations. The proposed 36" rcp will be 92' long.**

If the above criteria do not apply to this project, the crossing does not qualify under this section and must be designed according to 904.02 (Tier 1 crossings) or 904.05 (Tier 2 crossings).

If the above criteria apply to this project, please provide the following information.

The project may qualify as a **minimum** impact project if:
The crossing does not diminish the hydraulic capacity of the crossing. **No.**
The crossing does not diminish the capacity of the crossing to accommodate aquatic life passage. **No.**
The crossing meets the general design criteria specified in Env-Wt 904.01, as follows:

Env-Wt 904.01
(a) Not be a barrier to sediment transport;
The proposed structure is a 36" concrete pipe with a slope of 1.85% and a velocity of 9.5 ft/s; while downstream there is an approximately 3% channel with a velocity of 4.3ft/s These conditions support the crossing to transport sediment. Nothing that will be a barrier to sediment transport will be installed.

(b) Prevent the restriction of high flows and maintain existing low flows;
Upsizing the existing culvert from 30" to 36" will increase the crossing's capacity to pass high flows. The proposed design will not obstruct or substantially disrupt low flows.

(c) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction;
The proposed 36" pipe will be concrete with headwalls. The proposed pipe's inverts will match the upstream and downstream channels. These conditions will not obstruct or otherwise substantially disrupt the movement of aquatic life.

(d) Not cause an increase in the frequency of flooding or overtopping of banks;
The existing pipe is 30" in diameter and has no known history of flooding or related damage. The proposed design will upsize the crossing to a 36" diameter pipe increasing the capacity.

(e) Preserve watercourse connectivity where it currently exists;
The existing crossing maintains watercourse connectivity and does not have a perched outlet. The proposed cross pipe will maintain the elevations of the inlet and outlet of the existing crossing, therefore preserving watercourse connectivity.

(f) Restore watercourse connectivity where: (1) Connectivity previously was disrupted as a result of human activity(ies); and (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;
The proposed pipe will maintain the connectivity of the existing watercourse and improve the alignment of the stream under NH Route 16. The existing pipe currently takes a turn underground at a joint in the structure. The new alignment of the pipe eliminates this joint, is a shorter length of pipe than the existing, and will continue to inlet and outlet at the same elevation as the existing structure. The upgrade will not have a negative impact on the aquatic life upstream or downstream.

(g) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and
The channel at the inlet and outlet of the proposed crossing will be lined with stone to prevent scour and erosion. As noted above (904.01(a)) the crossing will not be a barrier to sediment transport or cause aggradation.

(h) Not cause water quality degradation.
The proposed pipe replacement will not have an effect on water quality. The system will be stable and serve its function of conveying water. Best Management Practices will be in place during construction to protect water quality.

If the project does not qualify as a minimum impact project due to reasons stated above, it may qualify as a **minor** impact project if:
The crossing does not adversely impact the stability of the stream banks or stream bed upstream or downstream of the crossing. **Correct.**
The crossing does not cause an increase in the frequency of flooding or overtopping of banks. **Correct.**

If the project does not meet the above criteria for minimum OR minor, the crossing does not qualify under this section and must be designed according to 904.02 (Tier 1 crossings) or 904.05 (Tier 2 crossings).

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Rebecca Martin, NH DOT
7 Hazen Drive
PO Box 483
Concord, NH 03302

From: Amy Lamb, NH Natural Heritage Bureau
Date: 10/31/2018 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB18-3352 Town: Ossipee Location: NH Route 16 between NH Route 28 and north of Polly's Crossing Road

Description: The project includes roadway rehabilitation including providing new pavement, drainage, and intersection improvements along a section of NH Route 16 between NH Route 28 and north of Polly's Crossing Road. The project will include new storm water treatment swales and new culverts. The project includes widened shoulders and realignment of the NH 28 slip ramp.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: Please provide more information about any work occurring in the vicinity of the small whorled pogonia population. Contact the NH Fish & Game Department for wildlife recommendations.

Plant species	**State[1]**	**Federal**	**Notes**
small whorled pogonia	T	T	Please contact NH Natural Heritage (271-2215 x 323) if project impacts could occur in the area shown on the map.

Vertebrate species	**State[1]**	**Federal**	**Notes**
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

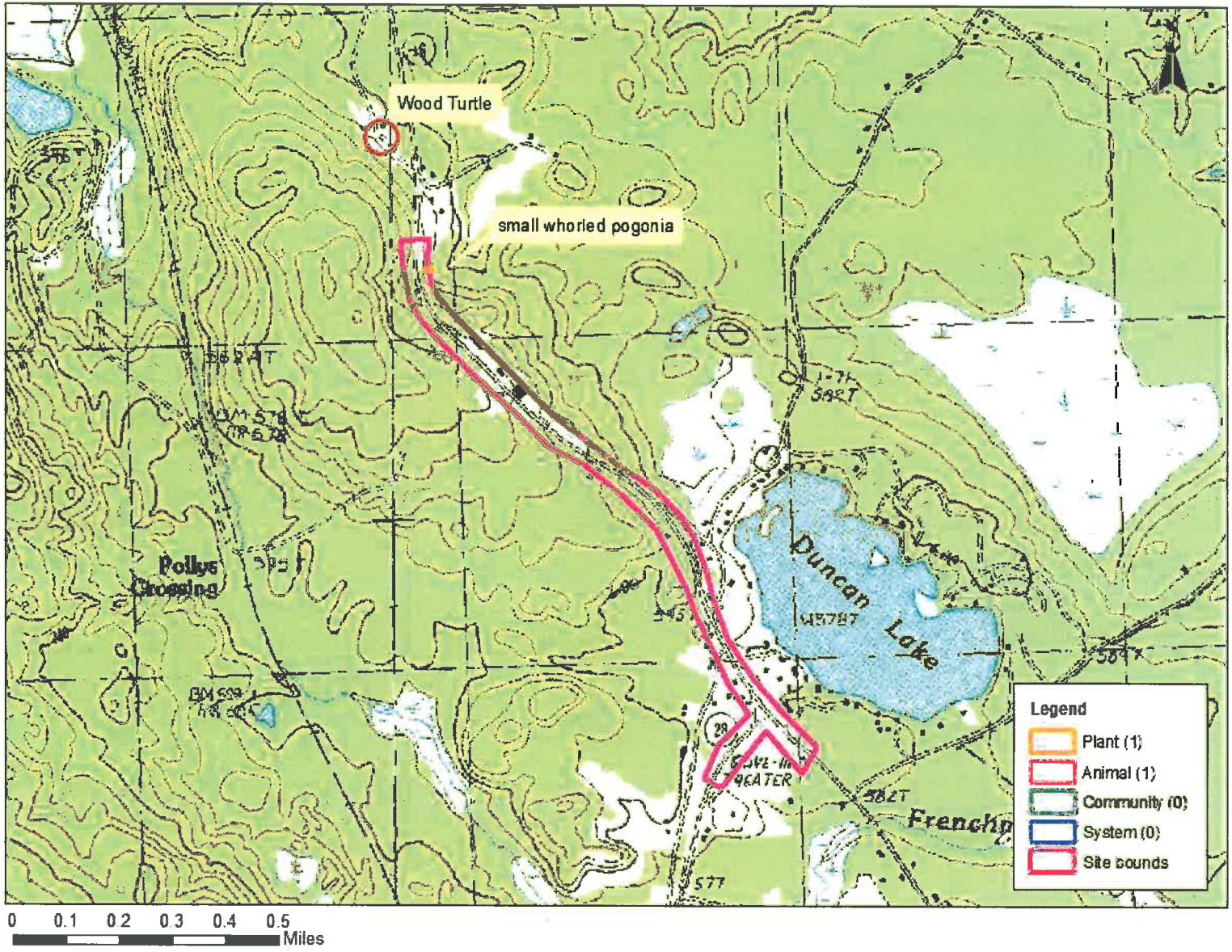
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB18-3352



New Hampshire Natural Heritage Bureau - Plant Record

small whorled pogonia

Isotria medeoloides

Legal Status		Conservation Status	
Federal:	Listed Threatened	Global:	Imperiled due to rarity or vulnerability
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2017: 1 plant in flower and 9 vegetative stems.

General Area: 2017: Mesic mixed northern hardwood / conifer forest behind a residential yard. Hemlock - beech - oak - pine forest with a heavy red maple (Acer rubrum) component. Overstory has up to 80% cover. Very little direct light gets to the understory.

Location

Survey Site Name: Duncan Lake, NW of
Conservation Land:

County: Carroll
Town(s): Ossipee
Size: .0 acres

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2017: [Behind house at 1062 Route 16, Ossipee].

Dates documented

First observation: 2017-06-19 Last observation: 2017-06-19

New Hampshire Natural Heritage Bureau - Animal Record

Wood Turtle (*Glyptemys insculpta*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Rare or uncommon
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2012: Area 13091: 1 adult observed.
General Area: 2012: Area 13091: Grassy roadside ditch.
General Comments:
Management Comments:

Location

Survey Site Name: Milliken Hill, south of
Managed By:

County: Carroll
Town(s): Ossipee
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2012: Area 13091: Thistle Road, Ossipee, about 70m from Rte. 16.

Dates documented

First reported:	2012-07-17	Last reported:	2012-07-17

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

CONFIDENTIAL – NH Dept. of Environmental Services review

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2017-SLI-0930
Event Code: 05E1NE00-2019-E-00455
Project Name: Ossipee 10431

October 29, 2018

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2017-SLI-0930

Event Code: 05E1NE00-2019-E-00455

Project Name: Ossipee 10431

Project Type: TRANSPORTATION

Project Description: The project includes roadway rehabilitation including new pavement, drainage improvements, and intersection improvements along a section of NH Route 16 between NH Route 28 and just north of Polly's Crossing. The intersection of Route 16 and Route 28 will be improved and shoulders will be added to a section of the project roadway. Storm water treatment swales have been incorporated into the design to treat runoff and some drainage improvements are planned.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.70791618367993N71.11396933566078W

Counties: Carroll, NH

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Small Whorled Pogonia *Isotria medeoloides* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

RE: Ossipee 10431, Rehabilitation of NH Route 16
Ossipee, New Hampshire (05E1NE00-2016-F-1836)

February 21, 2017

Rebecca Martin
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03301

Dear Ms. Martin:

The U.S. Fish and Wildlife Service (Service) is responding to your January 26, 2017 request and Project Submittal Form, received in our office on January 30, 2017, to verify that the proposed Ossipee 10431 Route 16 rehabilitation project in Ossipee, New Hampshire (Project) may rely on the May 20, 2016 Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the northern long-eared bat (NLEB) (*Myotis septentrionalis*). This letter provides the Service's response as to whether the Project may rely on the BO to comply with section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531, et seq.) for its effects to the NLEB.

The New Hampshire Department of Transportation's (NHDOT) proposed project includes improvements to the intersection of Route 16 and Route 28, drainage improvements, full box reconstruction of Route 16 from the intersection of Isaac Buswell Road to the intersection with Polly's Crossing Road, and installation of four storm water treatment areas. NHDOT, as the non-Federal agency representative for the Federal Highway Administration, determined that the Project is *likely to adversely affect* the NLEB, because the proposed action may affect trees occupied by the NLEB during the active season. NHDOT also determined that the Project may rely on the programmatic BO to comply with section 7(a)(2) of the ESA, because the Project meets the conditions outlined in the BO, all work related to highway rehabilitation will occur within 300 feet of the existing road surfaces, and all tree clearing related to the proposed roadwork will occur farther than 0.25 mile from documented roosts and farther than 0.5 mile from any hibernacula. The Service reviewed the Project Submittal Form and concurs with NHDOT's determination. This concurrence concludes your ESA section 7 responsibilities relative to this species for this Project, subject to the Reinitiation Notice below.

Conclusion

The Service has reviewed the effects of the proposed project, which includes the NHDOT's commitment to implement the impact avoidance and minimization measures as indicated on the Project Submittal Form. We confirm that the proposed project's effects are consistent with those analyzed in the BO. The Service has determined that the Project is consistent with the BO's conservation measures, and the scope of the program analyzed in the BO is not likely to jeopardize the continued existence of the NLEB. In coordination with your agency, the Federal Highway Administration, and the other sponsoring Federal Transportation Agencies, the Service will reevaluate this conclusion annually in light of any new pertinent information under the adaptive management provisions of the BO.

Incidental Take of the Northern Long-eared Bat

The Service anticipates that tree removal associated with the proposed project will cause incidental take of the NLEB. However, the Project is consistent with the BO, and such projects will not cause take of the NLEB that is prohibited under the final 4(d) rule for this species (50 CFR §17.40(o)). Therefore, this taking does not require exemption from the Service.

Reporting Dead or Injured Bats

The NHDOT, the Federal Highway Administration, its State/local cooperators, and any contractors must take care when handling dead or injured NLEBs that are found at the project site in order to preserve biological material in the best possible condition and to protect the handler from exposure to diseases, such as rabies. Project personnel are responsible for ensuring that any evidence about determining the cause of death or injury is not unnecessarily disturbed. Reporting the discovery of dead or injured listed species is required in all cases to enable the Service to determine whether the level of incidental take exempted by the BO is exceeded, and to ensure that the terms and conditions are appropriate and effective. Parties finding a dead, injured, or sick specimen of any endangered or threatened species must promptly notify the Service's New England Field Office.

Reinitiation Notice

This letter concludes consultation for the proposed project, which qualifies for inclusion in the BO issued to the Federal Transportation Agencies. To maintain this inclusion, a reinitiation of this project-level consultation is required where the Federal Highway Administration's discretionary involvement or control over the Project has been retained (or is authorized by law) and if:

1. new information reveals that the Project may affect listed species or critical habitat in a manner or to an extent not considered in the BO;
2. the Project is subsequently modified in a manner that causes an effect to listed species or designated critical habitat not considered in the BO; or
3. a new species is listed or critical habitat designated that the Project may affect.

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your continued efforts to ensure that this Project is fully consistent with all applicable provisions of the BO. If you have any questions regarding our response, or if you need additional information, please contact Susi von Oettingen of this office at 603-227-6418.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

Martin, Rebecca

From: Martin, Rebecca
Sent: Wednesday, July 12, 2017 8:30 AM
To: Susi vonOettingen (Susi_vonOettingen@fws.gov)
Cc: Lamb, Amy; Cairns, Sara
Subject: FW: FW: FW: Ossipee 10431 Consultation Code: 05E1NE00-2016-SLI-1836- Small whorled pogonia
Attachments: SWPOdot map 6 30 2017 say.csv; SWPOdot map 6 30 2017 say.gpx; SWPOdot map 6 30 2017 say.jgw; SWPOdot map 6 30 2017 say.jpg; SWPOdot map 6 30 2017 say.kml; SWPOdot moist leaf litter 6 30 17 say.jpg; SWPOdot site north toward shed 6 30 17 say.jpg; SWP HCDS Ossipee DOT 6 30 2017 SAYoung.doc; Northern10431.pdf

Hello Susi,

Please find attached the files that were supplied by Scott Young for the site in Ossipee. NH NHB asked Scott to meet me at the site to document the SWP. Scott is a botanist, specializes in SWP, and contracts with NHB. After reviewing the site, Scott commented that the upland area where the more southern stormwater treatment option is proposed (further from where the plants were found) would not likely support SWP habitat and would likely not impact the plants present. He also commented that the 24" pipe could likely be rehabilitated or replaced, so long as the work would not extend into the SWP area and the amount of water entering the SWP area would be similar. Scott mentioned that maintaining the current soil moisture in the SWP area is important. Do you need any additional information about the design or the SWP area? Do these avoidance measures (selecting the southern treatment area, excluding construction from the SWP site, maintaining a similar amount of water through the crossing) seem adequate?

Thank you,

Rebecca Martin
Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
Rebecca.Martin@dot.nh.gov

From: Scott Young [mailto:SAYoung603@outlook.com]
Sent: Tuesday, July 11, 2017 6:52 AM
To: Lamb, Amy; Cairns, Sara; Martin, Rebecca
Subject: Re: FW: FW: Ossipee 10431 Consultation Code: 05E1NE00-2016-SLI-1836- Small whorled pogonia

Hi All,
Here's my report on the Ossipee find. I have canopy and culvert photos if you need them -Scott

Scott A. Young
PO Box 123
Strafford,NH 03884
603 664 2846
SAYoung603@outlook.com

Martin, Rebecca

From: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Sent: Wednesday, July 12, 2017 8:52 AM
To: Martin, Rebecca
Subject: SWP and Ossipee 10431

Hi Rebecca,

Thanks so much for your email (I decided to start a clean email because the chain was so long and wide it was becoming unwieldy). I know Scott Young and his credentials are top notch, one of the go-to people for small whorled pogonia surveys and information.

I agree with the recommendations put forth regarding the southern stormwater treatment location, working outside of the SWP habitat and maintaining soil moisture conditions. If these conditions can be met, then I would anticipate that the project is not likely to adversely affect the SWP.

And thanks for finding a new location!

Susi

Susi von Oettingen
Endangered Species Biologist
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(W) 603-227-6418
(Fax) 603-223-0104

www.fws.gov/newengland

New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

OSSIPEE
X-MGS-NHS-X-T-0271(032)
10431
RPR8204

No Adverse Effect Memo

Pursuant to the Request for Project Review response from the New Hampshire Division of Historical Resources on December 1, 2016 and meeting discussions on July 14, 2016, January 12, 2017, and February 10, 2017, and for the purpose of compliance with regulations of the National Historic Preservation Act and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Division of Historical Resources (NHDHR) and the NH Division of the Federal Highway Administration (FHWA) have coordinated the identification and evaluation of historical and archaeological resources with plans to rehabilitate Route 16 from Route 28 to Route 16B in Ossipee, New Hampshire.

Based on a review pursuant to 36 CFR 800.4, we determined that no additional surveys are required as impacts to cultural resources will be avoided or minimized to avoid adverse effects, except for the replacement of a stone box culvert at the intersection of old Route 16 and Isaac Buswell Road. The stone box culvert that is to be replaced will be documented during construction when it is accessible. Documentation will include photographs and a combined Individual Inventory Form and Stone Box Culvert Form.

Section 4(f) Impact Finding

There Will Be:	☑ **No 4(f);**	☐ **Programmatic 4(f);**	☐ **Full 4 (f);** or

☐ **A finding of *de minimis* 4(f) impact as stated:** In addition, with NHDHR concurrence of no adverse effect for the above undertaking, and in accordance with 23 CFR 774.3, FHWA intends to, and by signature below, does make a finding of *de minimis* impact. NHDHR's signature represents concurrence with both the no adverse effect determination and the *de minimis* findings. Parties to the Section 106 process have been consulted and their concerns have been taken into account. Therefore, the requirements of Section 4(f) have been satisfied.

In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

for Patrick Bauer, Administrator — Date 2/17/2017
Federal Highway Administration

Jill Edelmann — Date
Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

Elizabeth H. Muzzey — Date
State Historic Preservation Officer
NH Division of Historical Resources

c.c. Chris St. Louis, NHDHR; Rebecca Martin, NHDOT; Sally Gunn, NHDOT; Jamie Sikora, FHWA; Jon Hebert, NHDOT; Victoria Chase, NHDOT

S:\Environment\PROJECTS\OSSIPEE\10431\Cultural\MEMO\Ossipee 10431 NoAdverse Effect FHWA.docx

US Army Corps of Engineers
New England District

U.S. Army Corps of Engineers
New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5 regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*		X
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres.		X
2.6 What is the size of the existing impervious surface area?	5.89 Acres	
2.7 What is the size of the proposed impervious surface area?	6.27 Acres	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	49%	
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)	X	
3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the PGP, GC 21?	X	

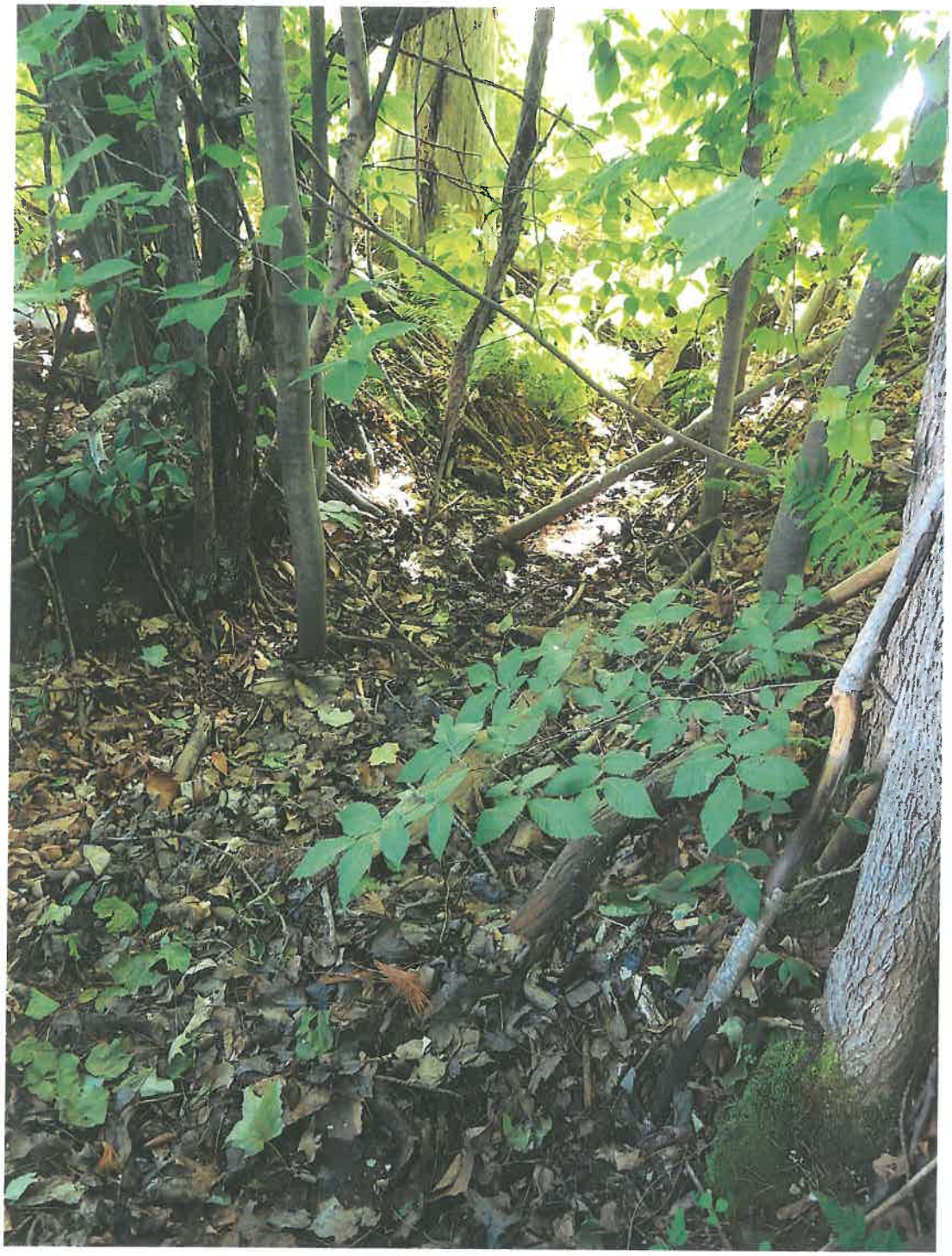
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage? N/A		
5. Historic/Archaeological Resources		
If a minor or major impact project, has a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) been sent to the NH Division of Historical Resources as required on Page 5 of the PGP?**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

Ossipee 10431 Wetland Permit Application Photos
Area A (PFO1B)

Area B (PFO1B, R4SB6)

Ossipee 10431 Wetland Permit Application Photos
Area B (PFO1B, R4SB6)



Ossipee 10431 Wetland Permit Application Photos
Area C (PFO1B, R4SB6)

Area C (PFO1B, R4SB6)

Ossipee 10431 Wetland Permit Application Photos
Area D (PSS1/FO1E)

Area E (PFO1E)

Ossipee 10431 Wetland Permit Application Photos
Area F (PFO1E)

Area F (PFO1E)

Ossipee 10431

Construction Sequence

Fall 2019

1. The contractor shall install any necessary temporary erosion control measures prior to construction.
2. Install traffic control devices (if needed for phase 1) prior to construction.
3. The contractor can begin work on repairing/replacing drainage features and constructing treatment swales.
    a. Station 120+00 – Construct water quality treatment swale. The contractor is expected to excavate the area of the swale. Additionally a new headwall will be installed in this area. Flow will not be disturbed.
    b. Station 127 + 00 - Replace 30" CIP with a 36" RCP and install new headwalls. The contractor is expected to maintain water flow in the existing pipe while the new pipe is constructed. Flow will be switched to the new pipe and the old pipe will be removed.
    c.
    d. Station 131+70 – Replace 24" CAP with a 24" RCP, install new catch basin, and construct a new headwall at the outlet. The existing pipe will be removed and the new pipe will be constructed immediately. Station 147 + 00 Construct water quality treatment area.
    e. Station 175 + 00 Construct water quality treatment area
    f. Station 176+50 Replace 24" CIP with 24" CAP extensions. The contractor is expected to remove and replace the pipe from the outlet end to the inlet. Due to the depth of this pipe it may take multiple days.
4. Earthwork and clearing for utility work may be ongoing during this phase.

2020 Construction

5. The contractor can work on the full box reconstruction from Sta 126+00 to Sta 172+45 on NH Route 16 and bring it up to binder level pavement by the beginning of the summer of 2020.
6. During the summer of 2020 any work outside of the Edge of Pavement such as drainage or treatment related work can be continued. All work must maintain two lanes of traffic.
7. Work that causes temporary lane closures can continue in the fall of 2020, such as the full box reconstruction and paving work.

2021 Construction

8. Final pavement on the reconstruction section will be finished in the spring of 2021 and all work in the overlay section from the beginning of the project limits to Sta 126+00 including NH Route 28.
9. Remove erosion controls measures once the site is stabilized.

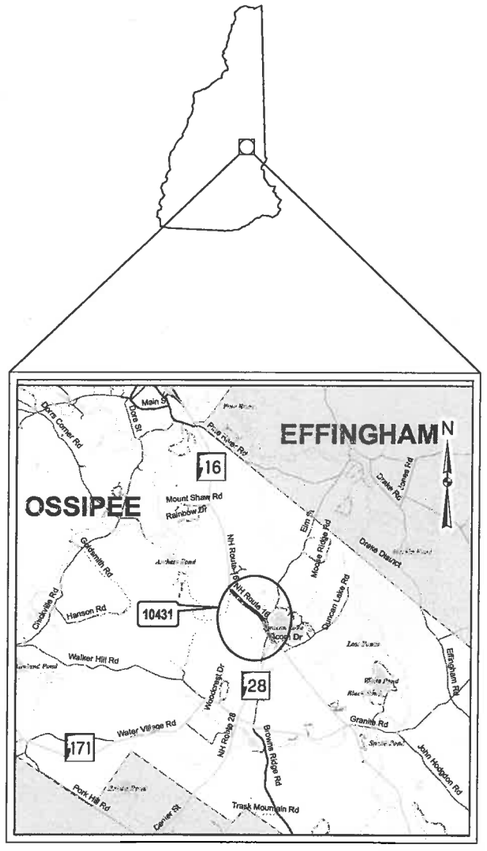
Note: Wildlife friendly erosion controls such as erosion control berms and woven organic materials will be utilized.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

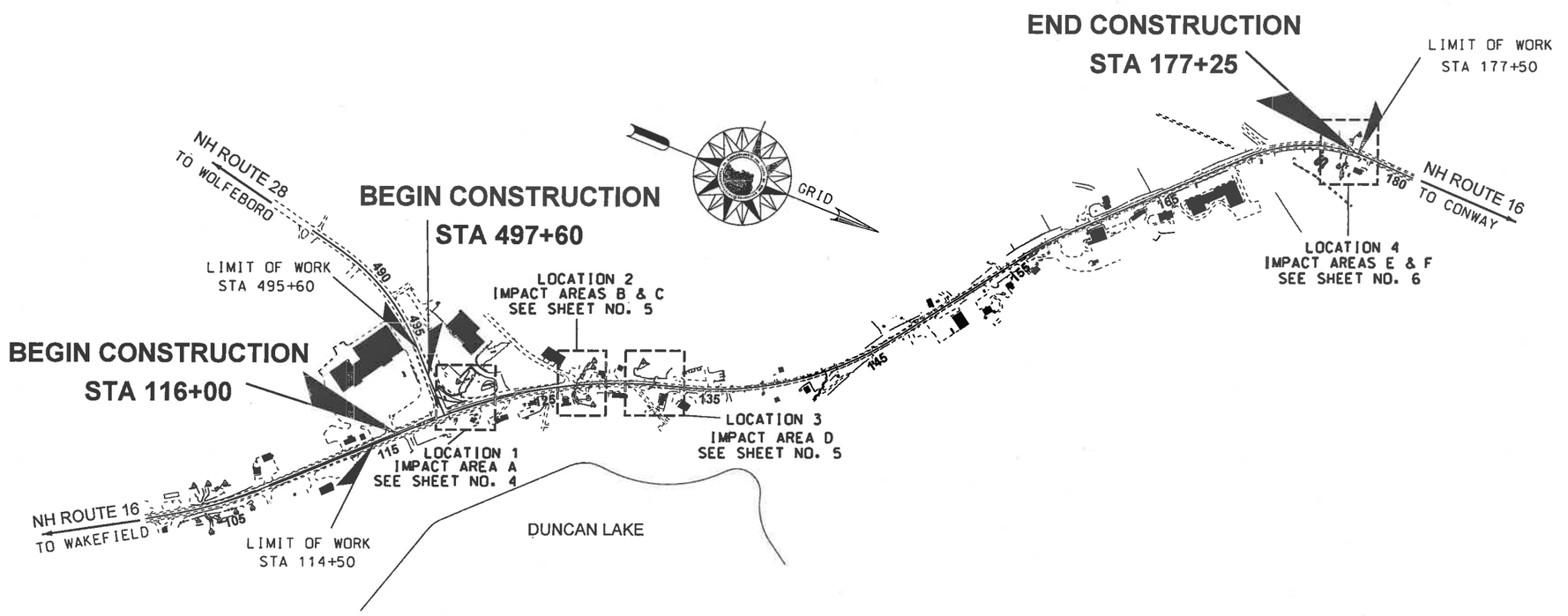
WETLANDS PLANS
FEDERAL AID PROJECT

X-027-1(32)
N.H. PROJECT NO. 10431
NH ROUTE 16

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20 16	12,070
AVERAGE DAILY TRAFFIC 20 36	14,730
PERCENT OF TRUCKS	6.0%
DESIGN SPEED	45 MPH
LENGTH OF PROJECT	1.05 MILE



LOCATION MAP



WETLAND DELINEATION REFINED AND UPDATED BY MATT URBAN AND REBECCA MARTIN JULY 2016

INDEX OF SHEETS

DRAWN BY	CM	DATE 10/18/18
CHECKED BY	EP	DATE 10/22/18

TOWN OF OSSIPEE

COUNTY OF CARROLL

SCALE: 1" = 400'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT — DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431FSW	X-027-1(32)	10431	1	14

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — existing roadway — (pavement removed outside slope lines)

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed)
(label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM — OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream — pond — (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)
(show station, circumference in feet & type)

TREE OR STUMP (CROSS-SECTIONS)

HEDGE — (label type)

MONITORING WELL — mon W

WELL — W

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing — PROPOSED — bgr — cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) — (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl — lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 PUB2E

DELINEATED WETLAND — DW
ORDINARY HIGH WATER — OHW
TOP OF BANK — TOB
TOP OF BANK & ORDINARY HIGH WATER — TOBOHW
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND — PWET
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — CDL
TIDAL BUFFER ZONE — TBZ
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE — HOTL
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL — VP
SPECIAL AQUATIC SITE — SAS
REFERENCE LINE — REF
WATER FRONT BUFFER — WB50
NATURAL WOODLAND BUFFER — NWB150
PROTECTED SHORELAND — PS250
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FP500
100 YEAR FLOODPLAIN BOUNDARY — FP100
FLOODWAY — FW

ENGINEERING

CONSTRUCTION BASELINE — 30 — 31 — 32

PC. PT. POT (ON CONST BASELINE)

PI (IN CONSTRUCTION BASELINES)

INTERSECTION OR EQUATION OF TWO LINES

ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)

PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)

CLEARING LINE — SLOPE LINE

SLOPE LINE

SLOPE LINE (FILL)

SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	10431-stdsymbl	10431	2	14

DRAINAGE

MANHOLE
CATCH BASIN — cb
DROP INLET — di
(existing) / (PROPOSED)

DRAINAGE PIPE (existing) — (label size & type)
DRAINAGE PIPE (PROPOSED)
UNDERDRAIN (existing) W/ FLUSHING BASIN — fb — (label size & type)
UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN
show direction of flow
HEADER (existing & PROPOSED) — (with stone outlet protection)
END SECTION (existing & PROPOSED) — METAL or PLASTIC / RCP
OPEN DITCH (PROPOSED)
EROSION CONTROL / STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE — (label type)
RR RIGHT-OF-WAY LINE
PROPERTY LINE
PROPERTY LINE (COMMON OWNER) — Z
TOWN LINE — BOW / CONCORD
COUNTY LINE — COOS / GRAFTON
STATE LINE — MAINE / NEW HAMPSHIRE
NATIONAL FOREST
CONSERVATION LAND — LC
BENCH MARK / SURVEY DISK
BOUND — bnd — (PROPOSED)
STATE LINE / TOWN LINE MONUMENT — S/L — T/L
NHDOT PROJECT MARKER
IRON PIPE OR PIN — ip
DRILL HOLE IN ROCK — dh
TAX MAP AND LOT NUMBER — 156 14 — 1642/341 — 6.80 Ac.±
PROPERTY PARCEL NUMBER — 12
HISTORIC PROPERTY — H

UTILITIES

	existing	PROPOSED
TELEPHONE POLE		
POWER POLE		
JOINT OCCUPANCY		
MISCELLANEOUS/UNKNOWN POLE		
GUY POLE OR PUSH BRACE		
	(plot point at face not center of symbol)	
LIGHT POLE		
LIGHT ON POWER POLE		
LIGHT ON JOINT POLE		
POLE STATUS: REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.:	R L	P+04 25.0' T+04 25.0'
RAILROAD	(label ownership)	
RAILROAD SIGN		
RAILROAD SIGNAL		
UTILITY JUNCTION BOX	jb	JB
OVERHEAD WIRE	OW (label type)	OW

UNDERGROUND UTILITIES

	existing	PROPOSED
WATER (on existing lines label size, type and note if abandoned)	W	PW
SEWER	S	PS
TELEPHONE	T	PT
ELECTRIC	E	PE
GAS	G	PG
LIGHTING	L	PL
INTELLIGENT TRANSPORTATION SYSTEM	ITS	
FIBER OPTIC	FO	PFO
WATER SHUT OFF	WSO	WSO
GAS SHUT OFF	GSO	GSO
HYDRANT	HYD	HYD

MANHOLES

SEWER	S	MHS
TELEPHONE	T	MHT
ELECTRICAL	E	MHE
GAS	G	MHG
UNKNOWN	U	

TRAFFIC SIGNALS / ITS

	existing	PROPOSED
MAST ARM (existing)		30' MA (NOTE ANGLE FROM ⊕)
OPTICOM RECEIVER		
OPTICOM STROBE		
TRAFFIC SIGNAL		
PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT		
SIGNAL CONDUIT	C	PC
CONTROLLER CABINET	cc	CC
METER PEDESTAL	mp	MP
PULL BOX	pb	PB
LOOP DETECTOR (QUADRUPOLE)		(label size)
LOOP DETECTOR (RECTANGULAR)		(label size)
CAMERA POLE (CCTV)		
FIBER OPTIC DELINEATOR	fod	FOD
FIBER OPTIC SPLICE VAULT		SVF
ITS EQUIPMENT CABINET	its	ITS
VARIABLE SPEED LIMIT SIGN		
DYNAMIC MESSAGE SIGN		
ROAD AND WEATHER INFO SYSTEM		

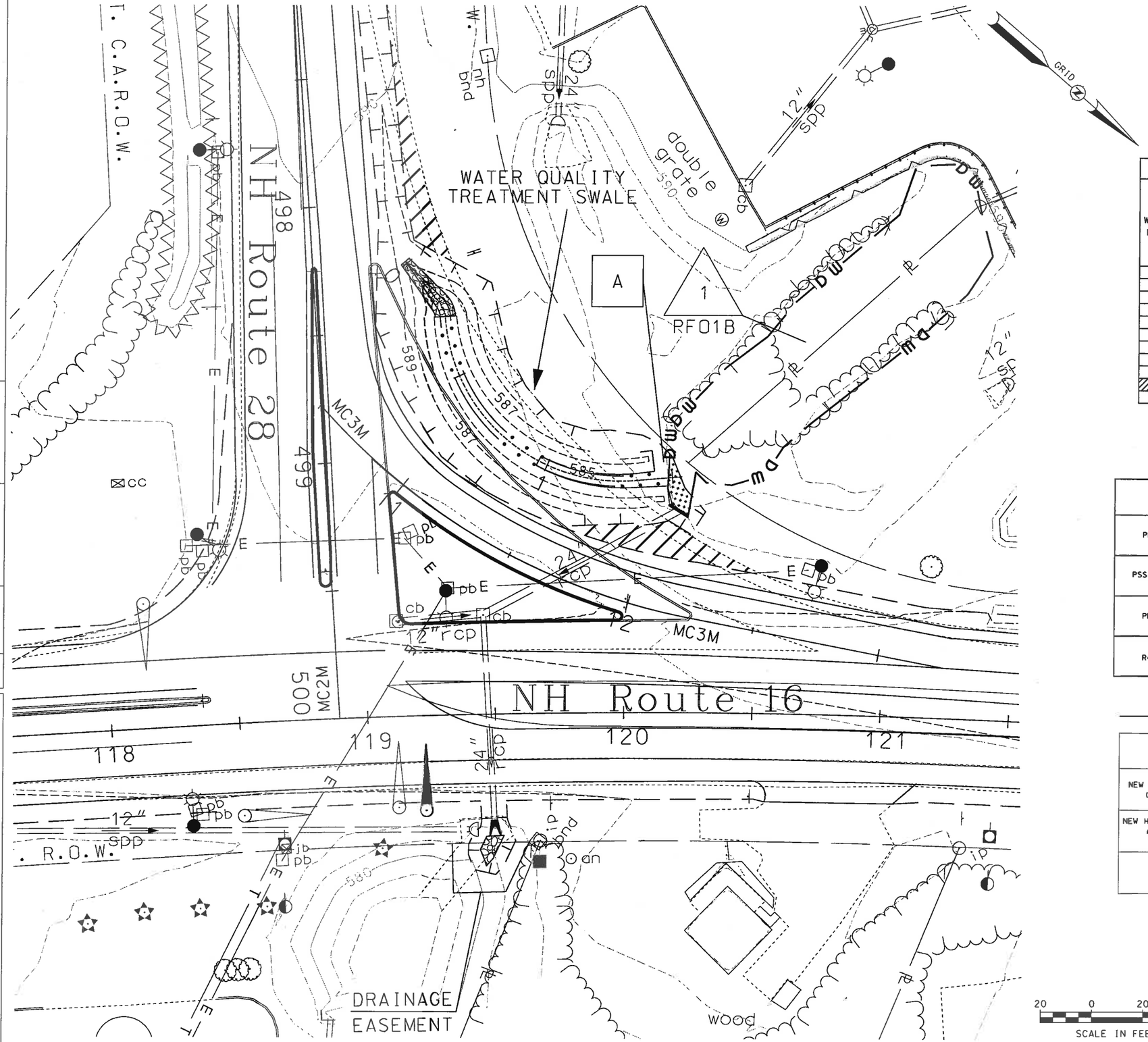
CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	A
DRAINAGE NOTE	1
EROSION CONTROL NOTE	A
FENCING NOTE	A
GUARDRAIL NOTE	1
ITS NOTE	1
LIGHTING NOTE	A
TRAFFIC SIGNAL NOTE	1

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	10431-stdsymbl	10431	3	14



WETLAND IMPACT SUMMARY								
WETLAND NUMBER	WETLAND CLASS-IFICATION	LOCATION	AREA IMPACTS					
			PERMANENT				TEMPORARY	
			N.H.W.B. (NON-WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)			
			SF	LF	SF	LF	SF	LF
1	PF01B	A					114	
1	PF01B	B			12		105	
1	PF01B	C			31		423	
2	PSS1/F01E	D			395		645	
3	PF01E	E			92		222	
3	PF01E	F			110		171	
4	R4SB6	B			16	10	73	
4	R4SB6	C			49	35	114	35
		TOTAL			705	45	1867	35

PERMANENT IMPACTS: 705 SF
TEMPORARY IMPACTS: 1867 SF

TOTAL IMPACTS: 2572 SF

WETLAND CLASSIFICATION CODES	
PF01B	PALUSTRINE. FORESTED BROAD-LEAVED DECIDUOUS. SATURATED
PSS1/F01E	PALUSTRINE. SCRUB-SHRUB. BROAD-LEAVED DECIDUOUS / PALUSTRINE. FORESTED BROAD-LEAVED DECIDUOUS. SEASONALLY FLOODED/SATURATED
PF01E	PALUSTRINE. FORESTED BROAD-LEAVED DECIDUOUS. SEASONALLY FLOODED/SATURATED
R4SB6	Riverine Intermittent Streambed Organic

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER
WETLAND IMPACT LOCATION
WETLAND MITIGATION AREA
MITIGATION

20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

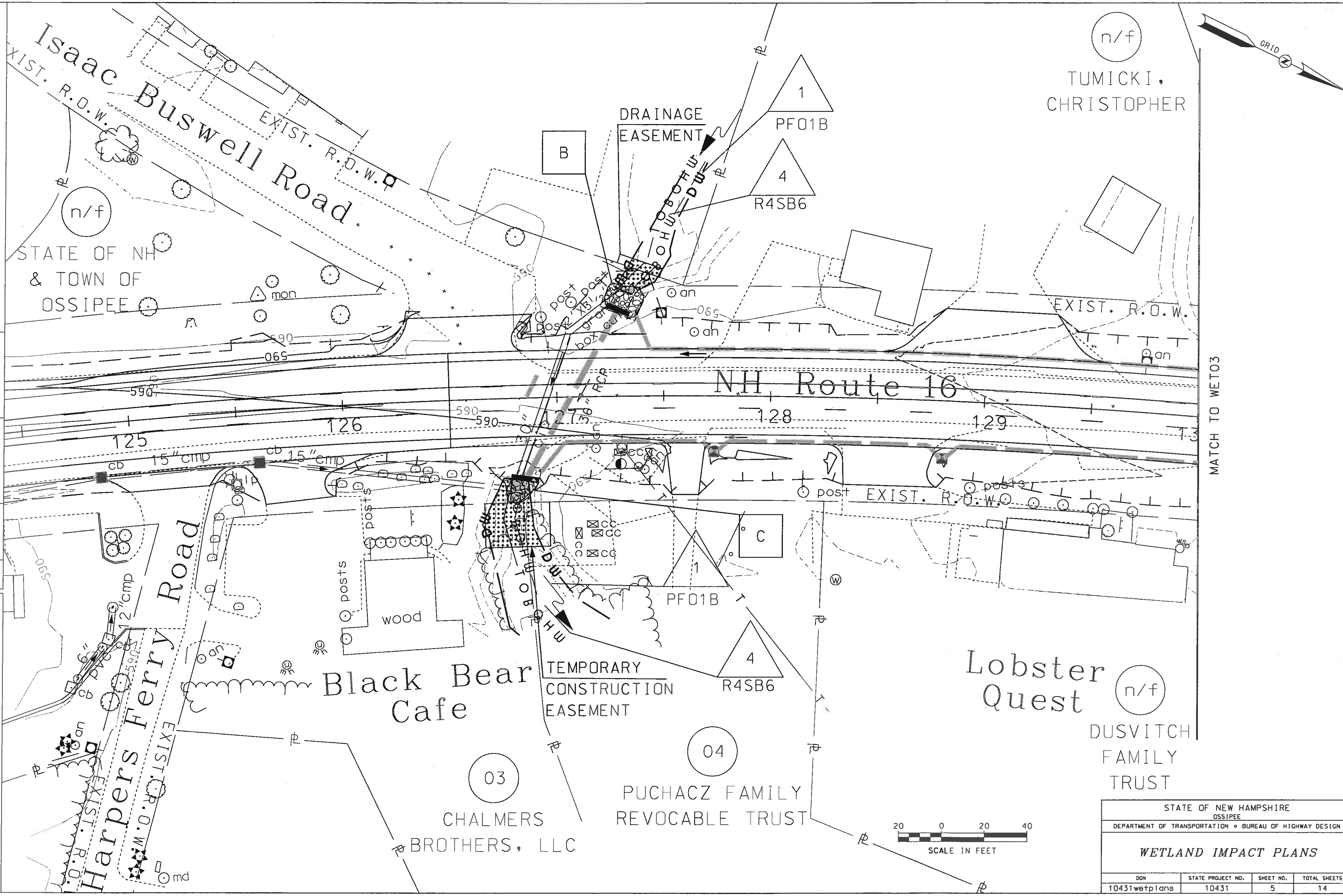
NUMBER	DATE	STATION	DESCRIPTION

	NAME	DATE
SDR PROCESSED	NAME1	DATE1
NEW DESIGN	NAME2	DATE2
SHEET CHECKED	NAME3	DATE3
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
OSSIPEE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431wetplans	10431	4	14


Isaac Buswell Road
EXIST. R.O.W.
n/f
STATE OF NH
& TOWN OF
OSSIPEE
mon
590
DRAINAGE
EASEMENT
B
1
PF01B
4
R4SB6
post
box culv
36" RCP
NH Route 16
125
126
127
128
129
cb
15" cmp
12" cmp
6" pvc
posts
wood
an
cc
C
TEMPORARY
CONSTRUCTION
EASEMENT
Black Bear
Cafe
Harpers Ferry Road
03
CHALMERS
BROTHERS, LLC
04
PUCHACZ FAMILY
REVOCABLE TRUST
md
Lobster
Quest
DUSVITCH
FAMILY
TRUST
TUMICKI,
CHRISTOPHER
GRID
MATCH TO WET03
20 0 20 40
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
OSSIPEE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431wetplans	10431	5	14

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

MATCH TO WET02

08
HARRY C. MERROW
FAMILY TRUST

2
PSS1/FO1E

D

CLEAR TO SLOPE
LINE ONLY

n/f
BEN
DOLIBER,
LLC
1 story
wood bldg

GRID N

EXIST. R.O.W.

NH Route 16

EXIST. R.O.W.

06
MCDONALD,
JAMES &
LINDA

07
HEPPE,
GREGORY F.
& TERESA M.

n/f
ECKHOFF,
STEVEN J.

EXIST. R.O.W.

Elm

CLEARING L

24" RCP

18" PL

15" cmp

18" RCP

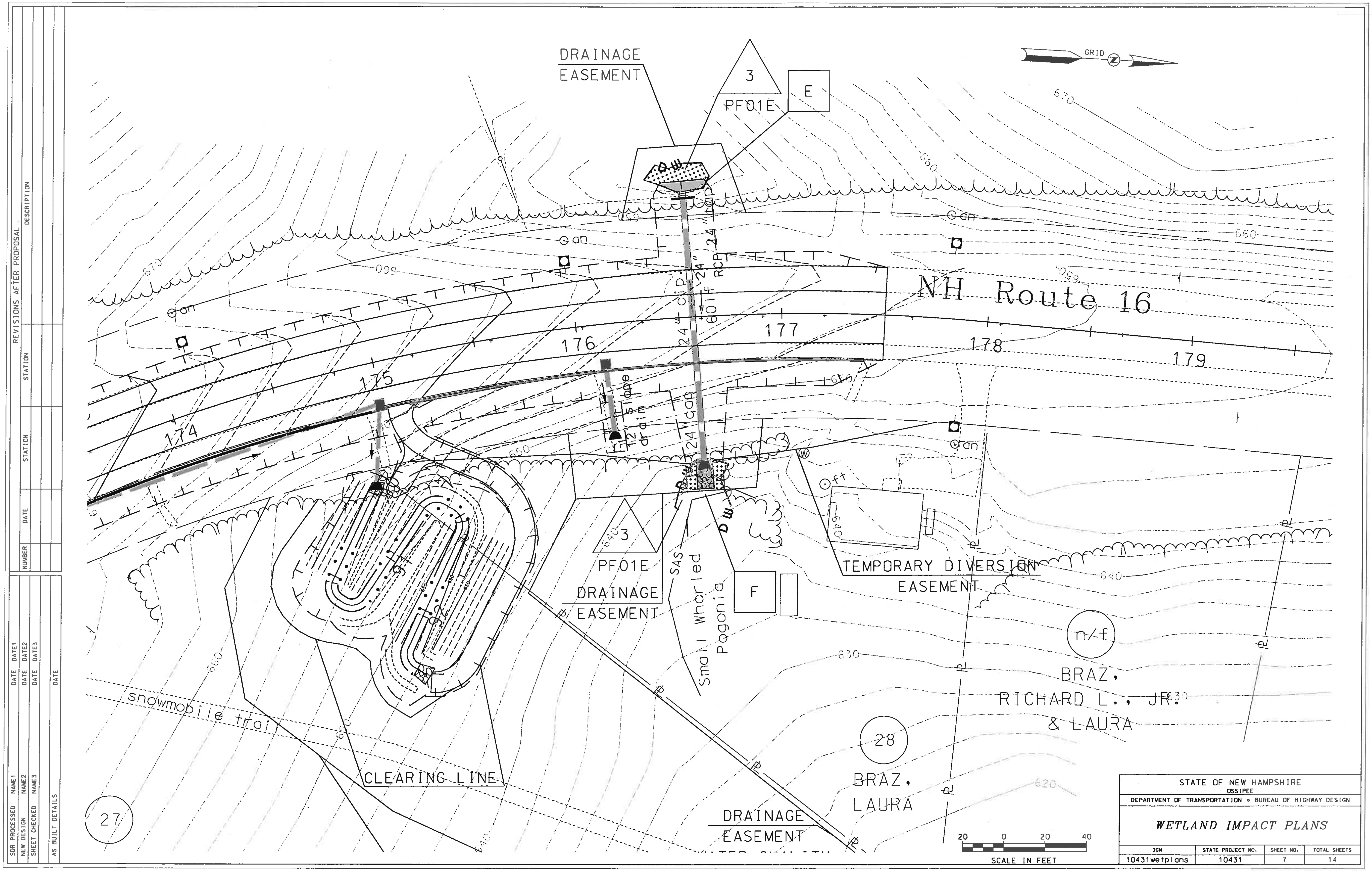
131 132 133 134 135 136

20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
OSSIPEE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431wetplans	10431	6	14


REVISIONS AFTER PROPOSAL
NUMBER
DATE
STATION
STATION
DESCRIPTION
SDR PROCESSED NAME1 DATE DATE1
NEW DESIGN NAME2 DATE DATE2
SHEET CHECKED NAME3 DATE DATE3
AS BUILT DETAILS DATE
GRID
DRAINAGE EASEMENT
3
PF01E
E
24" RCP
24" cap
60 lf
24" CIP
NH Route 16
174
175
176
177
178
179
670
660
650
640
630
620
an
ft
12" slope drain
24" cap
DW
SAS
Small Whorled Pogonia
F
TEMPORARY DIVERSION EASEMENT
n/f
BRAZ, RICHARD L., JR. & LAURA
28
BRAZ, LAURA
DRAINAGE EASEMENT
snowmobile trail
CLEARING LINE
27
91
92
20 0 20 40
SCALE IN FEET
STATE OF NEW HAMPSHIRE
OSSIPEE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN
WETLAND IMPACT PLANS
DGN 10431wetplans
STATE PROJECT NO. 10431
SHEET NO. 7
TOTAL SHEETS 14

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
   1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
   1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
   1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
   1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
   1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WQ 1500 REQUIREMENTS (HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM)
   1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.

2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
   2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
   2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
   2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
   2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
      (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
      (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
      (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
      (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
   2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
   2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
   2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
   2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30" AND MAY 1" OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
      (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
      (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
      (C) AFTER NOVEMBER 30" INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
      (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WQ 1505.02 AND ENV-WQ 1505.05.
      (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
   3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
   3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
   3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
   3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
   3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.

4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
   4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
   4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
   4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1" THROUGH NOVEMBER 30", OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.

5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
   5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
   5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
   5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
   5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
   5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.

6. PROTECT SLOPES:
   6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
   6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
   6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
   6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.

7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
   7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
   7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.

8. PROTECT STORM DRAIN INLETS:
   8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
   8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
   8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
   8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.

9. SOIL STABILIZATION:
   9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
   9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
   9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR, IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
   9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.

10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
   10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WQ 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
   10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
   10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
   11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
   11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
   11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
   11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
   11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
   11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
   11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
   11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
   11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
   12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500: ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
   12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
   12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
   12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
   12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
   12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
   12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.

13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
   13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
   13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
   13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
   13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.

14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
   14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
   14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1. IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
   14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WQ 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES'	YES'	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

STATE OF NEW HAMPSHIRE
OSSIPEE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	10431-Erostrat	10431	8	14

EROSION CONTROL PLAN LEGEND

PERIMETER CONTROL (PC)
- SILT FENCE
- EROSION CONTROL MIX BERM
- EROSION CONTROL MIX SOX
- TURBIDITY CURTAIN
- SHEET PILE
- COFFER DAM

NATURAL BUFFER/PERIMETER CONTROL (NB/PC)
- SILT FENCE
- EROSION CONTROL MIX BERM
- EROSION CONTROL MIX SOX
- TURBIDITY CURTAIN
- SHEET PILE
- COFFER DAM

CHANNEL PROTECTION (CP)
- STONE CHECK DAMS
- STRAW WATTLES
- CHANNEL MATTING
- CLASS D EROSION STONE
- CLASS C STONE

CLEAN WATER BYPASS (CWB)
- PUMP THROUGH PIPE
- DRAIN THROUGH PIPE OR CHANNEL

STA 495+60
LIMIT OF WORK

STA 496+50
BEGIN APPROACH

STA 116+00
BEGIN CONSTRUCTION
OVERLAY

STA 497+60
BEGIN CONSTRUCTION
OVERLAY

STA 114+50
BEGIN APPROACH

NH Route 28

NH Route 16

Hannaford

Ocean State Job Lot

Tractor Supply Co.

Family Dollar

Rite Aid Pharmacy

CANTRELL INVESTMENTS, LLC

OSJ OF OSSIPEE, LLC

AMES DEPARTMENT STORES, INC.

IRVING OIL CORPORATION

BUCHANAN, RALPH R., JR.

DANIEL G. KAMEN OSSIPEE, LLC

THE RAED HERTEL FAMILY TRUST & HERTEL, FREDERICK E., III & MARY BETH

KENNETT, WASON & JONES, INC.

HUTTON PARTNERS, LLC

INLAND AMERICAN CGF PORTFOLIO, LLC

Citizens Bank

DRAINAGE EASEMENT

EXIST. R.O.W.

EXIST. C.A.R.D.W.

0 POINTS OF ACCESS

box stores

Tractor Supply Detention Pond

GRID

MATCH TO SHEET 9

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

	NAME1	DATE	DATE1
SDR PROCESSED			
NEW DESIGN	CM	DATE	10/18/18
SHEET CHECKED	EP	DATE	10/22/18
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431eroplans	10431	9	14

MATCH TO SHEET 8

MATCH TO SHEET 10

STA 126+00
BEGIN
APPROACH

STA 126+50
BEGIN FULL BOX
RECONSTRUCTION

GRID N

Isaac Buswell Road
EXIST. R.O.W.

NH Route 16

EXIST. R.O.W.

Harpers Ferry Road

Black Bear Cafe

Lobster Quest

Elm Street

Rte. 16 Dairy Bar

5
RYMES, THOMAS J.

n/f
STATE OF NH & TOWN OF OSSIPEE

n/f
TUMICKI, CHRISTOPHER

08
HARRY C. MERROW FAMILY TRUST

n/f
BEN DOLIBER, LLC
1 story wood bldg

08
HARRY C. MERROW FAMILY TRUST

DRAINAGE EASEMENT

1
PF01B

2
PSS1/F01E

4
R4SB6

B

C

D

CLEAR TO SLOPE LINE ONLY

TEMPORARY CONSTRUCTION EASEMENT

03
CHALMERS BROTHERS, LLC

04
PUCHACZ FAMILY REVOCABLE TRUST

n/f
DUSVITCH FAMILY TRUST

06
MCDONALD, JAMES & LINDA

n/f
ECKHOFF, STEVEN J.

07
HEPPE, GREGORY F. & TERESA M.

CLEARING LINE

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CM	DATE	10/18/18
SHEET CHECKED	EP	DATE	10/22/18
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431eroplans	10431	10	14

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

	NAME	DATE
SDR PROCESSED	NAME1	DATE1
NEW DESIGN	CM	10/18/18
SHEET CHECKED	EP	10/22/18
AS BUILT DETAILS		DATE

MATCH TO SHEET 9

GRID N

08 HARRY C. MERROW FAMILY TRUST

10 REIS, STEVEN C.

09 SCHOPPMEYER, CHRISTIAN J. & TERRI M.

11 JOHNSTON, THEODORE W. CAVES, ROBERT S. SWAIN, MARK A.

12 BERRY, JENNIFER A.

13 SUNDAY PAVING & SEALING INC

14 SIMMONS TRUST

15 COPP, R. ELTON, JR. & BARBARA

16 THE CALVIN M. FARNSWORTH REVOCABLE TRUST - 1994 THE LOIS N. FARNSWORTH REVOCABLE TRUST - 1994

MATCH TO SHEET 11

NH Route 16

Island Path

CLEARING LINE

TEMP SLOPE EASEMENT

DRAINAGE EASEMENT

WATER QUALITY TREATMENT AREA

TEMP DRIVE EASEMENT

CLEAR TO SLOPE

EXIST. R.O.W.

ROW

50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

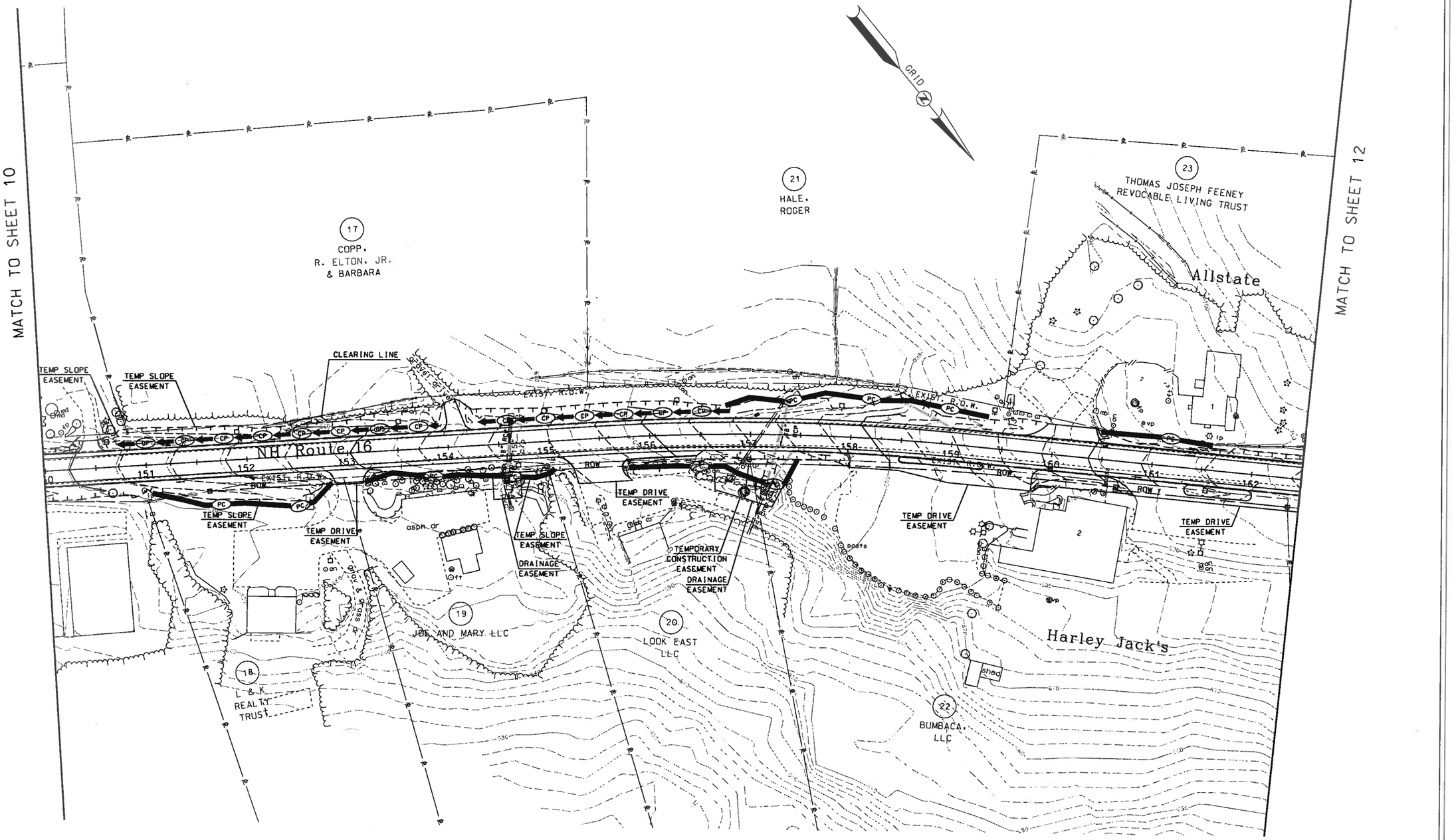
EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431eroplans	10431	11	14

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	CM	DATE 10/18/18
SHEET CHECKED	EP	DATE 10/22/18
AS BUILT DETAILS		DATE



50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ⊙ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431eroplans	10431	12	14

MATCH TO SHEET 11

MATCH TO SHEET 13

GRID N

21 HALE, ROGER

CLEARING LINE

TEMP SLOPE EASEMENT

CLEAR TO SLOPE

approx loc.

NH Route 16

EXIST. R.O.W.

Polly's Crossing Road

DRAINAGE EASEMENT

gravel drive

pavers apron

asph parking

asph drive

gravel dr

Green Mountain Furniture

24 GARY R. WALLACE AUCTIONEERS, INC.

25 GARY R. WALLACE AUCTIONEERS, INC.

26 GMF TRUST. KENDALL, DARYL A., KENDALL, STEPHEN, KENDALL, SCOTT, KENDALL, PAUL & DORAN, DIANE

27 COLEMAN CONCRETE INC.

50 0 50 100

SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

		DATE	DATE1
SDR PROCESSED	NAME1		
NEW DESIGN	CM	DATE	10/18/18
SHEET CHECKED	EP	DATE	10/22/18
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431eroplans	10431	13	14

STA 177+25
END CONSTRUCTION

STA 177+50
END APPROACH

GRID N

29
GERALDINE D. SMITH
CONSERVATION TRUST

DRAINAGE EASEMENT

3
RFO1E

E

NH Route 16

EXIST. R.O.W.

176 177 178 179 180 181 182 183 184

EXIST. R.O.W.

Jude Blvd

gravel dr

EXIST. PVT.

EXIST. PVT. R.O.W.

3
PFO1E
DRAINAGE EASEMENT

F

Small Whorled Pogonia

TEMPORARY DIVERSION EASEMENT

n/f
BRAZ,
RICHARD L., JR.
& LAURA

n/f
FARIS,
JEFFREY J. &
MELISSA L.

n/f
FARIS,
JEFFREY J. &
MELISSA L.

n/f
T & G
CORPORATION

28
BRAZ,
LAURA

snowmobile trail

CLEARING LINE

27
COLEMAN CONCRETE INC.

DRAINAGE EASEMENT
WATER QUALITY TREATMENT AREA

DRAINAGE EASEMENT
WATER QUALITY TREATMENT AREA

27
COLEMAN CONCRETE INC.

MATCH TO SHEET 12

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10431eroplans	10431	14	14